



IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellants: Günter DOMENS et al.

Application No.: 09/381,839

Art Unit: 2623

Filed: September 24, 1999

Examiner: Colin M. Larose

For: METHOD FOR THREE-DIMENSIONAL IDENTIFICATION OF OBJECTS

Attorney Docket No.: 32860-000207/US

REPLY BRIEF**May 12, 2006**

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Sir:

This Reply Brief is responsive to the Examiner's Answer mailed March 13, 2006. Appellants have carefully reviewed the Examiner's Answer and respectfully submit that the final rejection of claims 4-7 should be reversed in view of Appellants' Appeal Brief and the following remarks.

I. The Conventional Art:

The Examiner attempts to use the instant specification to deprecate Appellants' own invention. Specifically, the Examiner highlights the fact that the instant application characterizes "triangulation" features as conventional, and then concludes that Appellants'

now consider the pending claims patentable by virtue of the very same feature.¹ The Examiner’s position is not convincing for a couple of reasons.

First, the Examiner’s remarks are irrelevant to this Appeal to the extent that the conventional art disclosed in the application has never been applied against the pending claims.

Second, Appellants do not contend that the triangulation principles themselves are patentable. Instead, Appellants have consistently argued that each of the independent claims recites a combination of features that is patentably distinct from the asserted prior art references. Indeed, in the Appeal Brief, Appellants argued that independent claims 4 and 7 are patentable by virtue of the “triangulation principles” feature *in combination with the other features recited in independent claims 4 and 7.*²

II. Triangulation *versus* Interpolation:

The Examiner continues to compare Di Matteo’s “interpolation” technique to the “triangulation principles” feature defined by independent claims 4 and 7. This is somewhat surprising given the Examiner’s express agreement with the electronic dictionary definitions that Appellants provided (with the Appeal Brief) for “interpolation” and “triangulation.”³

The Examiner’s position is based on the misunderstanding that triangulation involves “ascertaining the location of a new (*e.g.*, unknown) data point” from geometric calculations related to two other known points.⁴ Interestingly, the Examiner has again failed to furnish any objective evidence to support the allegation. The Examiner has not done so because no such objective evidence exists.

The only objective evidence of record (*i.e.*, the dictionary definitions) indicates that triangulation does not ascertain the location of a data point, much less a new (or unknown) data point. As pointed out in the Appeal Brief, triangulation involves *finding a distance* to a point by calculating the length of one side of a triangle, given measurements of angles and

¹ Examiner’s Answer, p. 8, lines 5-11.

² Appeal Brief, p. 4, lines 12-15.

³ Examiner’s Answer, p. 8, lines 20 and 21.

⁴ Examiner’s Answer, p. 9, lines 1-6.

sides of the triangle *formed by that point* and two other reference points.⁵ A distance to a point (e.g., 1 foot) is not comparable to a location of a point (e.g., x, y and z coordinates). Furthermore, triangulation involves calculations relating to *three known points* (i.e., the vertices of the triangle), but it does not involve constructing new data points.

Appellants acknowledge that both triangulation and interpolation involve mathematical calculations. Other than that, the two techniques are practically and conceptually different to the extent that they have different inputs, utilize different mathematical calculations and yield different results.

III. Fig. 8 of Di Matteo:

The Examiner maintains that Fig. 8 of Di Matteo (and the corresponding disclosure) would have been recognized by those skilled in the art as requiring triangulation principles.⁶ The Examiner's position is based on the following two allegations: (1) Fig. 8 illustrates two triangles: one between points P, 58a and 58b; and one between points P, 58c and 58d; and (2) the two triangles are utilized to measure or compute the location of point P.⁷ Neither allegation is supported by the record.

Fig. 8 of Di Matteo does not illustrate any triangles. Specifically, points P, 58a and 58b do not form a triangle because points 58a and 58b are not connected together. At best, the points P, 58a and 58b form a "V" shape. Similarly, the points P, 58c and 58d do not form a triangle because points 58c and 58d are not connected together. At best, the points P, 58c and 58d form a "V" shape. Appellants note that the elements 58 provided between the points 58c and 58d represent discrete and spaced apart intersections between circular shaped elements 54 and vertical elements 56 of the reference surface 52 depicted in Fig. 6.⁸

Turning to the next point, even if Fig. 8 were interpreted as illustrating triangles, the Examiner's position would still be incorrect because such triangles would not be used to measure or compute the location of point P (as alleged by the Examiner). According to Di Matteo's straightforward disclosure, the spatial position of the point P is located by

⁵ Appeal Brief, p. 4, lines 8-12.

⁶ Examiner's Answer, p. 9, lines 12-16.

⁷ Examiner's Answer, p. 10, lines 6-10.

⁸ Di Matteo, col. 7, lines 25-39.

“*interpolation*” with respect to the neighboring points of intersection 58a and 58b.⁹ Points 58d and 58c are used for “*interpolating*” to point P from points 58a and 58b, respectively.¹⁰

IV. Figs. 18-20 of Di Matteo:

The Examiner maintains that Figs. 18-20 of Di Matteo (and the corresponding disclosure) teach utilizing triangulation principles.¹¹ Specifically, the Examiner alleges that the coordinates of the lens node 108 are determined using triangulation principles to analyze the geometric arrangement of Fig. 19a.¹² The Examiner’s position is incorrect for several reasons.

Appellants agree with the Examiner that Fig. 19a illustrates the trigonometric relationships between the lens node 108 and the lines 120 and 122.¹³ Appellants also agree that the lens node 108 is in the plane of the triangle having vertices 108, 112 and 114, and that it is essential to take into account the angular orientation of the plane of the triangle to find the spatial coordinates of the lens node 108.¹⁴

Notwithstanding Di Matteo’s disclosure, the Examiner fails to appreciate that finding spatial coordinates of the lens node 108 does not involve *finding a distance* to the lens node 108. A distance to a point (*e.g.*, 1 foot) is not comparable to a location of a point (*e.g.*, x, y and z coordinates).

Furthermore, Di Matteo indicates that the location of the lens node 108 (in spatial coordinates x, y and z) is determined graphically (but not by calculating the length of one side of the triangle, given measurements of angles and sides of the triangle formed by the lens node 108 and two other reference points).¹⁵ Such teachings are far too general to teach the “triangulation principles” defined by independent claims 4 and 7.

⁹ Di Matteo, col. 7, lines 62-65.

¹⁰ Di Matteo, col. 8, lines 1 and 2.

¹¹ Examiner’s Answer, p. 10, lines 21-23.

¹² Examiner’s Answer, p. 11, lines 14-16.

¹³ Di Matteo, col. 14, lines 15-17.

¹⁴ Di Matteo, col. 14, lines 25-31.

¹⁵ Di Matteo, col. 14, lines 31-42.

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Finally, the Examiner alleges that Di Matteo's technique involves analyzing triangles using "geometry (*i.e.*, triangulation)" to ascertain the location of the lens node 108.¹⁶ Thus, it appears that the Examiner believes that geometry and triangulation are one in the same. However, triangulation is a subset of geometry, which broadly covers the mathematics of the properties, measurement, and relationships of points, lines, angles, surfaces, and solids. Consequently, the two terms are not synonymous.

V. Conclusion:

For the above reasons, as well as the reasons set forth in the Appeal Brief, Appellants respectfully request that the Board reverse the Examiner's rejection of all claims on Appeal. An early and favorable decision on the merits of this Appeal is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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¹⁶ Examiner's Answer, p. 12, lines 1-3.